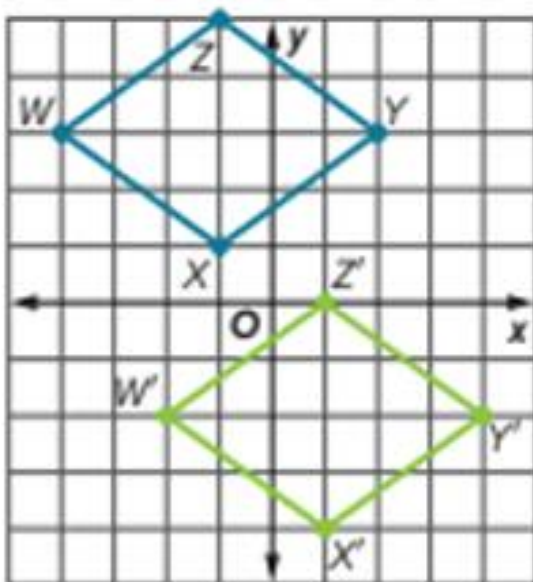


Math

Grade 8

EoT3
Exam Coverage
2025-2026

5. The preimage and image of $WXYZ$ are shown. Use coordinate notation to describe the translation. (Example 3)



Test Practice

6. **Open Response** Triangle JKL has vertices $J(-2, 2)$, $K(-3, -4)$, and $L(1, -2)$. Write the coordinate notation for a translation of 8 units right and 1 unit up.

TRANSLATIONS

Rule:

$$(x, y) \rightarrow (x + a, y + b)$$

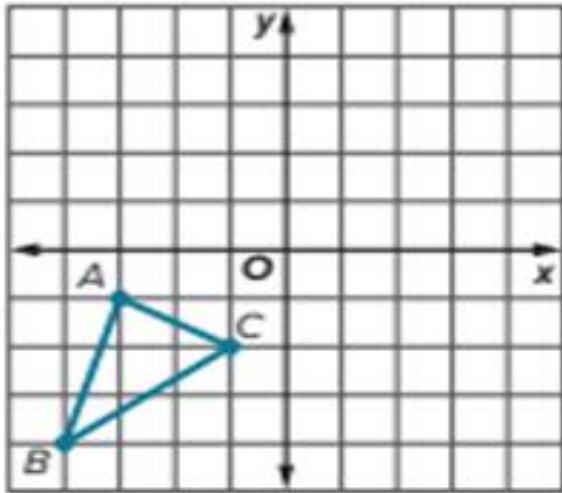
a = horizontal movement
(right if +, left if -)

b = vertical movement
(up if +, down if -)

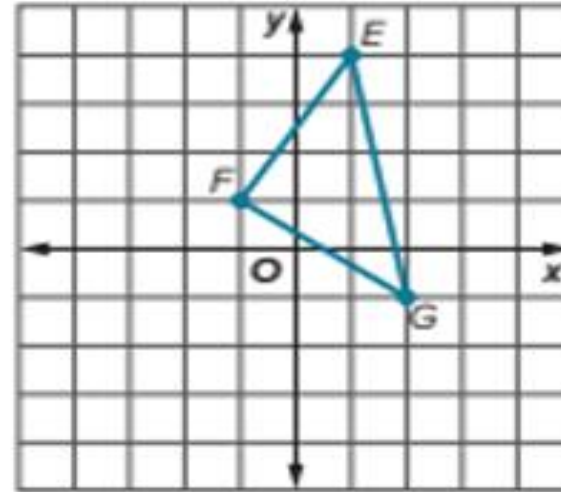
Example:

$$(x, y) \rightarrow (x + 3, y - 2)$$

1. The graph of $\triangle ABC$ is shown. Graph the image of $\triangle ABC$ after a translation of 4 units right and 1 unit up. Write the coordinates of the image. (Example 1)



2. The graph of $\triangle EFG$ is shown. Graph the image of $\triangle EFG$ after a translation of 3 units left and 1 unit down. Write the coordinates of the image. (Example 1)



Rule:

$$(x, y) \rightarrow (x + a, y + b)$$

a = horizontal movement
(right if +, left if -)

b = vertical movement
(up if +, down if -)

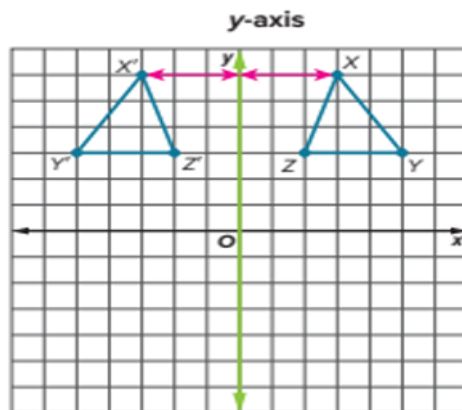
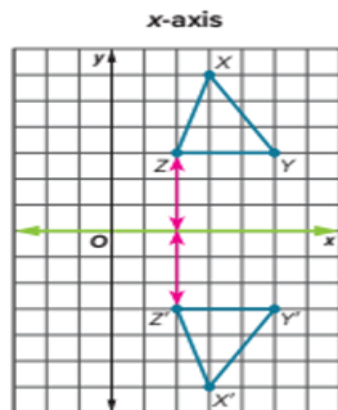
Example:

$$(x, y) \rightarrow (x + 3, y - 2)$$

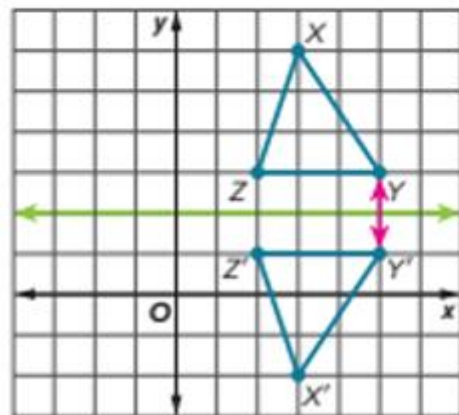
Triangle QRS has vertices $Q(-2, 2)$, $R(-3, -4)$, and $S(1, -2)$. Write the coordinate notation for each translation given. Then write the coordinates of $\triangle Q'R'S'$ after each translation. (Example 2)

3. 7 units right and 4 units down

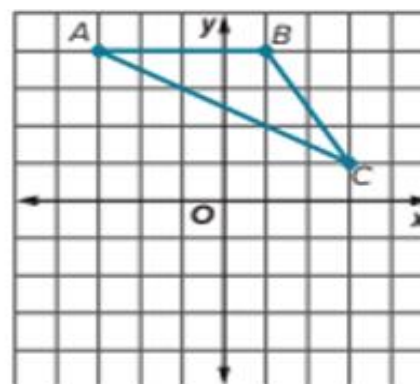
4. 2 units left and 3 units up

Learn Reflections on a Coordinate Plane

You can also reflect a figure across other lines. The reflection $\triangle XYZ$ across the line $y = 2$ is shown below.

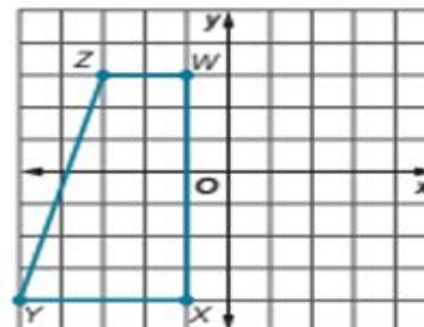


1. The graph of $\triangle ABC$ is shown. Graph the image of $\triangle ABC$ after a reflection across the x -axis. Write the coordinates of the reflected image. (Example 1)

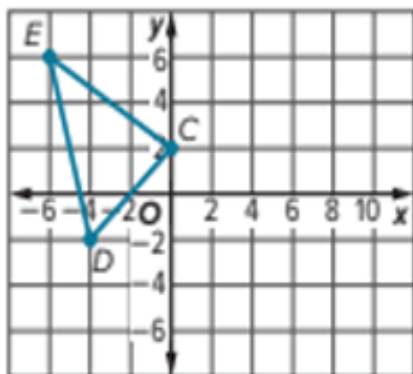
**Reflection Rules:**

- Over the x -axis: $(x, y) \rightarrow (x, -y)$
- Over the y -axis: $(x, y) \rightarrow (-x, y)$
- Over the origin: $(x, y) \rightarrow (-x, -y)$

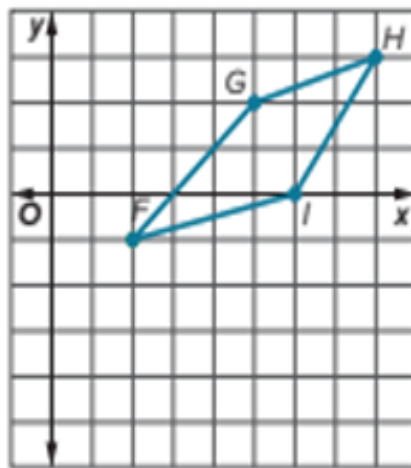
2. The graph of trapezoid $WXYZ$ is shown. Graph the image of $WXYZ$ after a reflection across the y -axis. Write the coordinates of the reflected image. (Example 1)



3. The graph of $\triangle CDE$ is shown. Graph the image of $\triangle CDE$ after a reflection across the line $x = 2$. Include the line of reflection. Then write the coordinates of the image. (Example 2)



4. The graph of polygon $FGHI$ is shown. Graph the image of $FGHI$ after a reflection across the line $y = -1$. Include the line of reflection. Then write the coordinates of the image. (Example 2)

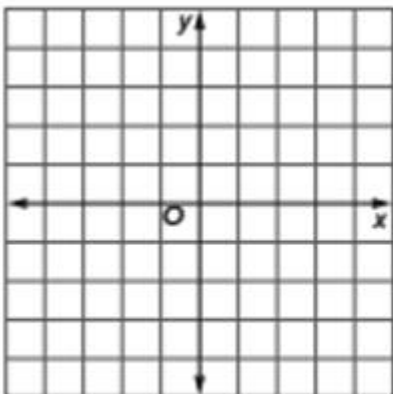


5. Triangle TUV has coordinates $T(0, 3)$, $U(-3, 0)$, and $V(-4, 4)$. The triangle is reflected across the y -axis. Write the coordinate notation for a reflection across the y -axis. Then, write the coordinates of $\triangle T'U'V'$. (Example 3)

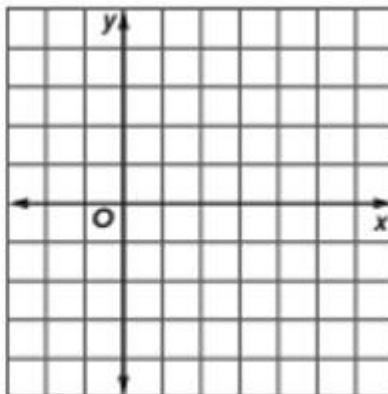
Reflection Rules:

- Over the x -axis: $(x, y) \rightarrow (x, -y)$
- Over the y -axis: $(x, y) \rightarrow (-x, y)$
- Over the origin: $(x, y) \rightarrow (-x, -y)$

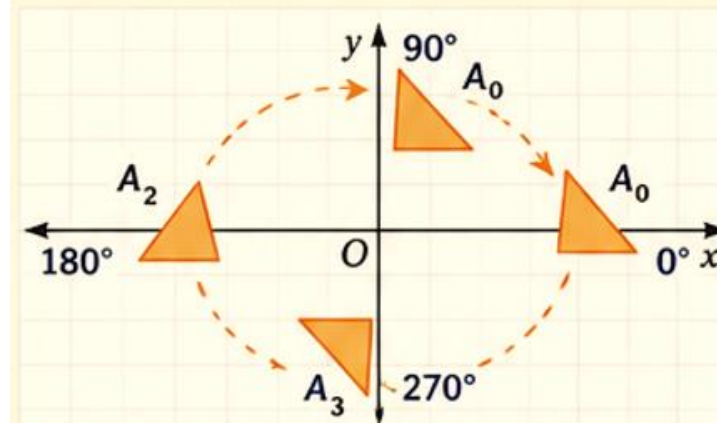
1. Polygon $EFGH$ has vertices $E(-1, 3)$, $F(1, 4)$, $G(3, 3)$, and $H(0, 0)$. Graph the figure and its image after a clockwise rotation of 90° about vertex H . Then write the coordinates of polygon $E'F'G'H'$. (Example 1)



2. Triangle XYZ has vertices $X(-2, -1)$, $Y(0, 2)$, and $Z(2, -1)$. Graph the figure and its image after a clockwise rotation of 180° about vertex Z . Then write the coordinates of $\triangle X'Y'Z'$. (Example 1)



M8L3 – ROTATIONS



Rotation Rules (about the origin):

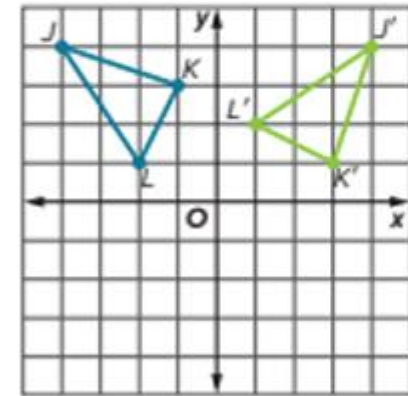
- 90° counterclockwise: $(x, y) \rightarrow (-y, x)$
- 180° : $(x, y) \rightarrow (-x, -y)$
- 270° counterclockwise: $(x, y) \rightarrow (y, -x)$
- 90° clockwise: $(x, y) \rightarrow (y, -x)$

Triangle QRS has vertices $Q(-2, 2)$, $R(-3, -4)$, and $S(1, -2)$. Write the coordinate notation for each rotation given. Then write the coordinates of $\triangle Q'R'S'$ after each rotation. (Example 2)

3. clockwise rotation of 180° about the origin

4. clockwise rotation of 270° about the origin

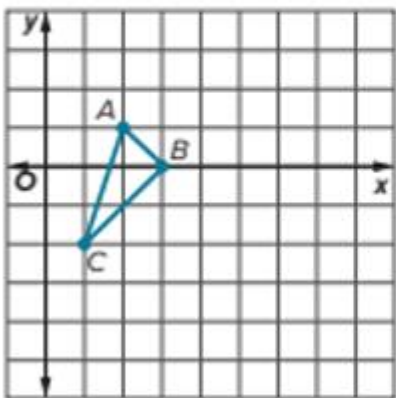
5. Use coordinate notation to describe the rotation. Then determine the angle of rotation. Assume the rotation is clockwise about the origin. (Example 3)



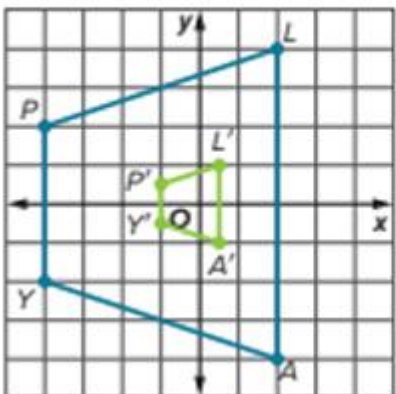
Rotation Rules (about the origin):

- 90° counterclockwise: $(x, y) \rightarrow (-y, x)$
- 180° : $(x, y) \rightarrow (-x, -y)$
- 270° counterclockwise: $(x, y) \rightarrow (y, -x)$
- 90° clockwise: $(x, y) \rightarrow (y, -x)$

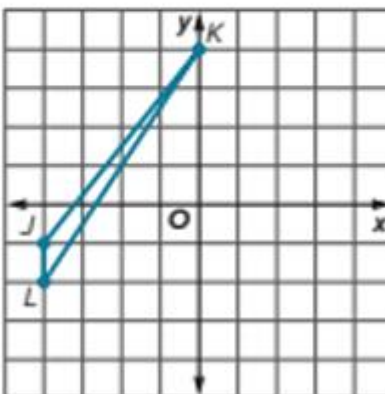
2. Triangle ABC has vertices $A(2, 1)$, $B(3, 0)$, and $C(1, -2)$. Graph the image of the figure after a dilation with a scale factor of 3. (Example 1)



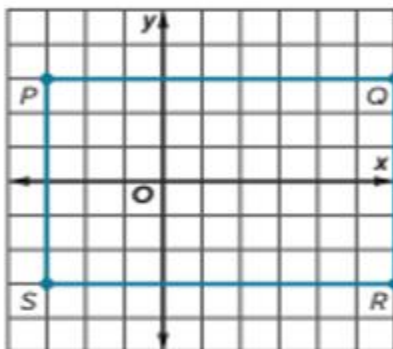
5. Use coordinate notation to describe the dilation. (Example 3)



3. Triangle JKL has vertices $J(-4, -1)$, $K(0, 4)$, and $L(-4, -2)$. Graph the image of the figure after a dilation with a scale factor of 0.5. (Example 2)



4. Rectangle $PQRS$ has vertices $P(-3, 3)$, $Q(6, 3)$, $R(6, -3)$, and $S(-3, -3)$. Graph the image of the figure after a dilation with a scale factor of $\frac{1}{3}$. (Example 2)



DILATIONS

Dilation Rule (about the origin):

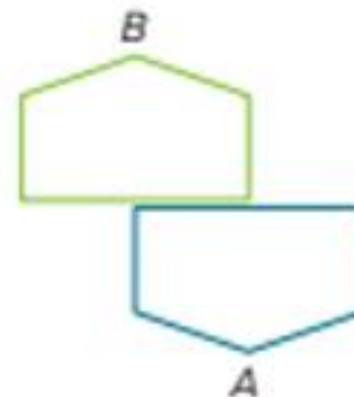
$$(x, y) \rightarrow (kx, ky)$$

k = scale factor

- $k = 2$ (enlargement)

- $k = \frac{1}{2}$ (reduction):

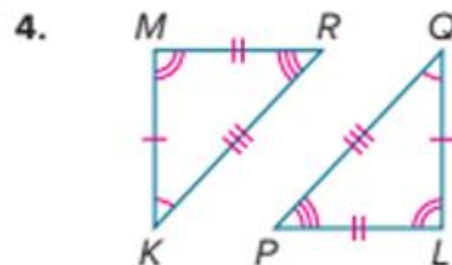
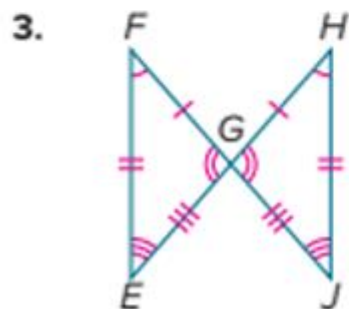
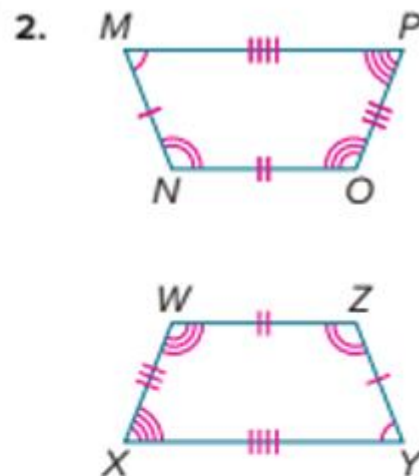
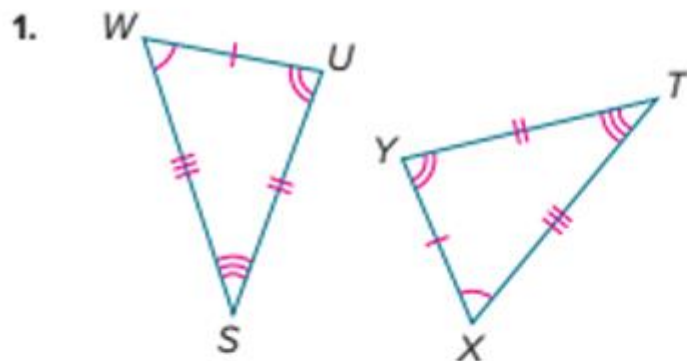
4. For his school web page, Manuel created the logo shown at the right. What transformations could be used to create the logo if Figure A is the preimage and Figure B is the image? Are the two figures congruent? (Example 4)



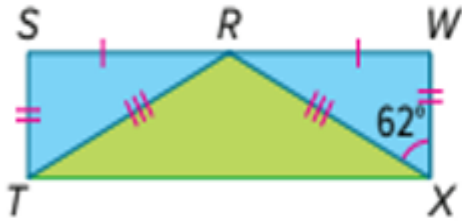
5. For the local art gallery opening, the curator had the design shown at the right created. What transformations could be used to create the design if Figure A is the preimage and Figure B is the image? Are the two figures congruent? (Example 4)



Write congruence statements comparing the corresponding parts in each set of congruent figures. (Example 1)



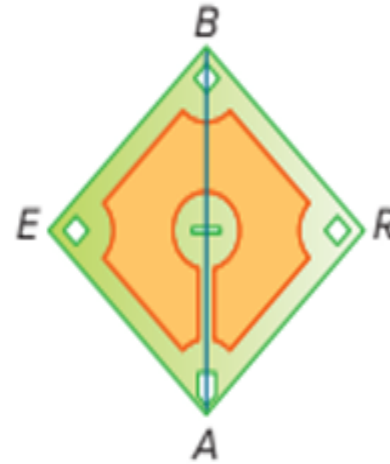
5. In the quilt design shown, $\triangle RST \cong \triangle RWX$. If $m\angle WXR = 62^\circ$, what is the measure of $\angle STR$? (Example 2)



8. In the city park map shown, $\triangle DEF \cong \triangle JKL$. The distance from D to E is 20 yards and the distance from D to F is 40 yards. What is the distance from K to L ? Round to the nearest tenth.

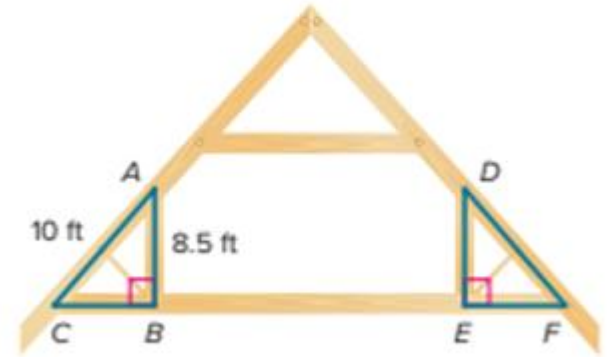


6. **Open Response** In the baseball diamond shown, $\triangle BEA \cong \triangle ARB$. The length of $\overline{BE}$ is 90 feet. What is the length of $\overline{AR}$? (Example 2)



Apply

7. In the roof construction shown, $\triangle ABC \cong \triangle DEF$. If $AB = 8.5$ feet and $AC = 10$ feet, what is the length of $\overline{EF}$? Round to the nearest tenth.



4. Jenna is creating a mural for her bedroom wall. She would like to copy a picture that is 2 inches by 2.5 inches. She uses a copy machine to enlarge it by a scale factor of 4. Then she projects it on her wall by a scale factor of 12. What are the dimensions of the mural? Are the enlarged pictures similar to the original? (Example 4)

Test Practice

5. **Multiple Choice** Which sequence of transformations can be used to show that two figures are similar but not necessarily congruent?
- (A) dilation and rotation
 - (B) translation and reflection
 - (C) reflection and rotation
 - (D) rotation and translation

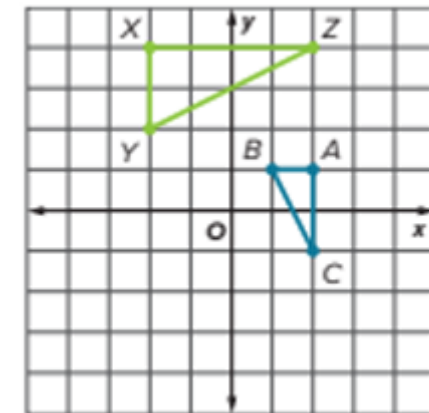
Learn Identify Transformations

Similar figures have the same shape, but may have different sizes. The sizes of the two similar figures are related to the scale factor of the dilation.

If the scale factor of the dilation is ...	then the dilated figure is ...
between 0 and 1	smaller than the original
equal to 1	the same size as the original
greater than 1	larger than the original

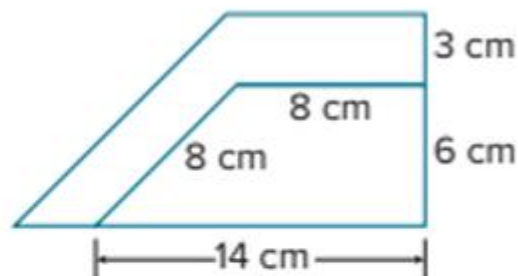
You can determine the sequence of a dilation followed by a congruence transformation that maps one figure onto a similar figure.

3. Triangle ABC is similar to $\triangle XYZ$. Determine which sequence of transformations maps $\triangle ABC$ onto $\triangle XYZ$. (Example 3)

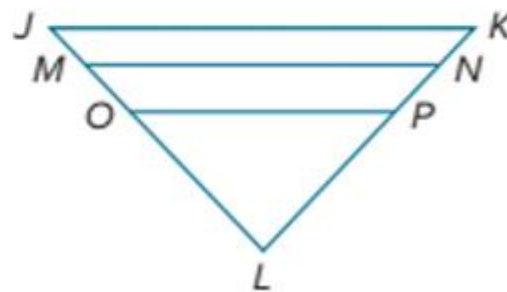


Apply

8. Samantha used craft wire to make the design shown. She first made the smaller quadrilateral. Then she enlarged the smaller quadrilateral to make the larger quadrilateral, using a scale factor that extended the 6-centimeter side by 3 centimeters. What total length of craft wire did Samantha use for both quadrilaterals?



9. Triangle JKL is reduced to obtain triangle MNL . Using the same scale factor, triangle MNL is reduced to obtain triangle OPL . If $JK = 35$ millimeters, $KL = 25$ millimeters, $LJ = 25$ millimeters, and $MN = 28$ millimeters, what is the perimeter of triangle OPL ?



13. A blue rectangular tile and a red rectangular tile are similar. The blue tile has a length of 10 inches and a perimeter of 30 inches. The red tile has a length of 6 inches. What is the perimeter of the red tile?

Apply

7. Mr. Nolan's math class went out to measure shadows in their school yard. Their data is recorded in the table. Find the missing heights.

Person/Item	Shadow Length (ft)	Height of Person/Item (ft)
Mr. Nolan	9	6
Flagpole	48	
School	63	
School Bus	16.5	

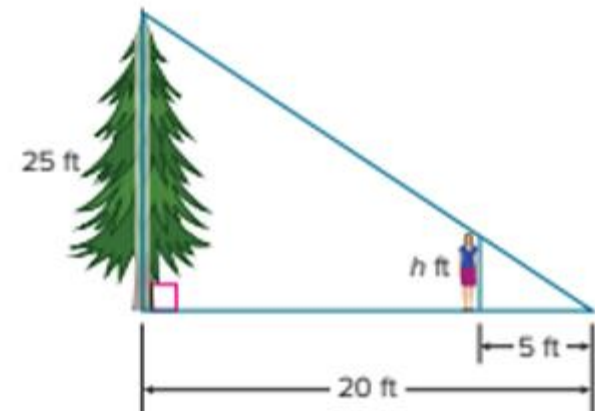
8. A map of a treasure hunt is shown. In the figure, the triangles are similar. What is the distance from the silver coins to the gold coins?

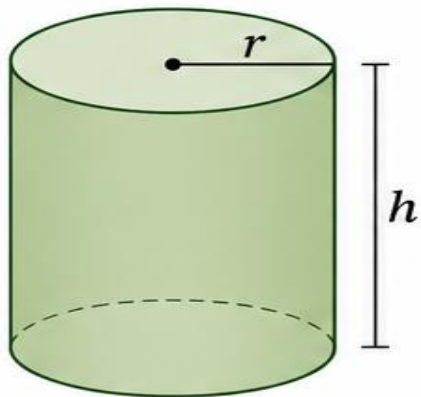


11. **MP Find the Error** A student used the proportion below to find the person's height h shown in the diagram. Find the student's mistake and correct it.

$$\frac{h}{5} = \frac{20}{25}$$

$$h = 4$$

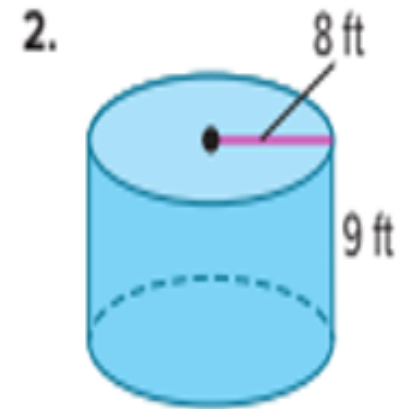
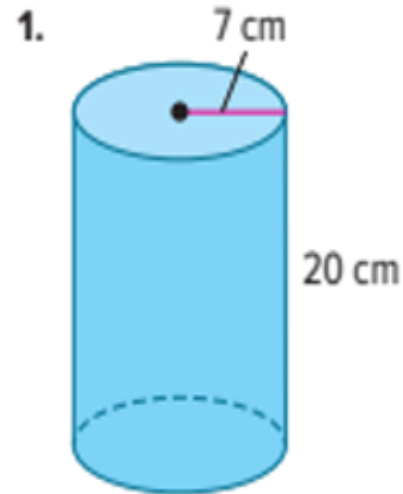


Learn Volume of Cylinders**1. CYLINDER** (Base: Circle)

$$V = \pi r^2 h$$

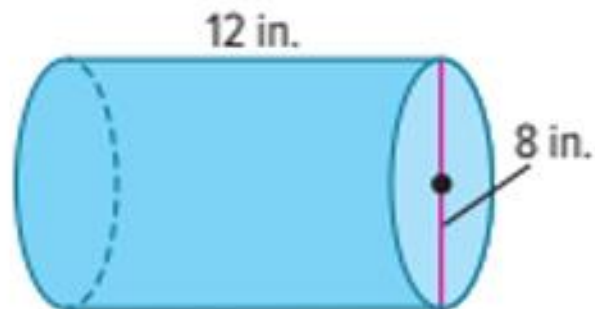
 r = radius of base h = height

Find the volume of each cylinder. Round to the nearest tenth.

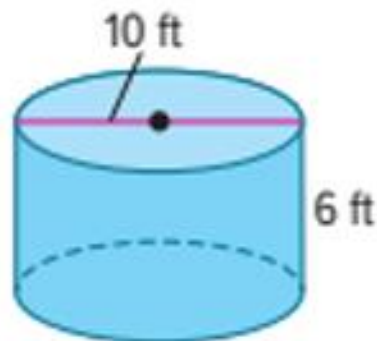


Find the volume of each cylinder. Express your answer in terms of π . (Example 2)

3.



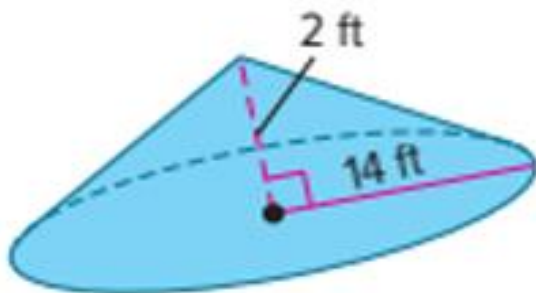
4.



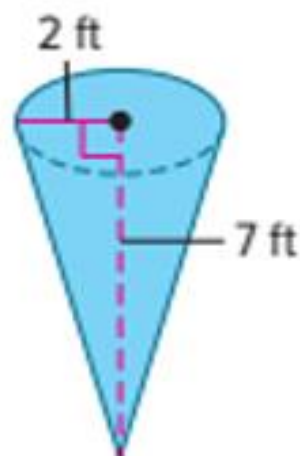
5. A wooden toy block is in the shape of a cylinder. The toy block has a height of 4 inches and a diameter of 3 inches. How much does the toy block weigh if 1 cubic inch of wood weighs 0.55 ounce? Round to the nearest tenth. (Example 3)

Find the volume of each cone. Express your answer in terms of π . (Example 1)

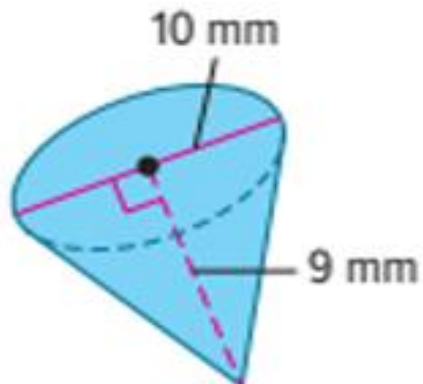
1.



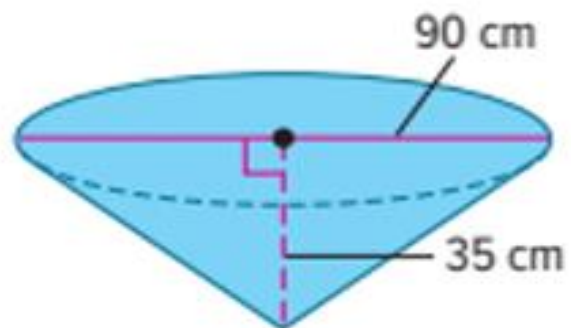
2.



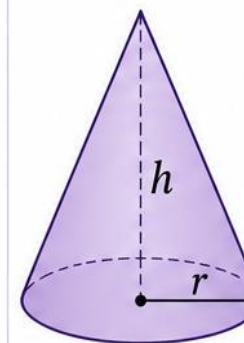
3.



4.



5. CONE (Base: Circle)



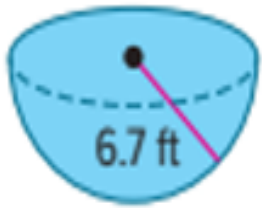
$$V = \frac{1}{3} \pi r^2 h$$

r = radius of base

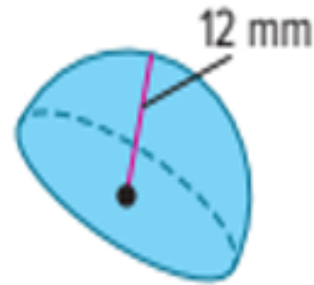
h = height

Find the volume of each hemisphere. Round to the nearest tenth. (Example 4)

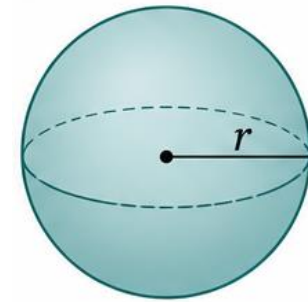
5.



6.



6. SPHERE



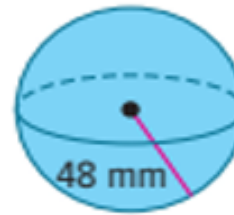
$$V = \frac{4}{3} \pi r^3$$

r = radius

7. Olga is using spherical beads to create a border on a picture frame. Each bead has a diameter of 1.5 millimeters. Find the volume of each bead. Round to the nearest tenth.

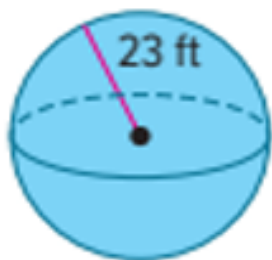
Test Practice

8. **Open Response** What is the volume of the sphere shown? (Use 3.14 for π .)

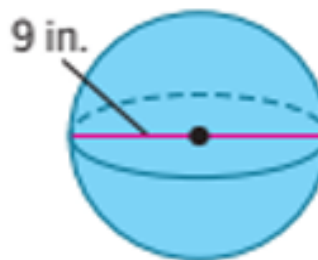


Find the volume of each sphere. Express your answer in terms of π . (Example 1)

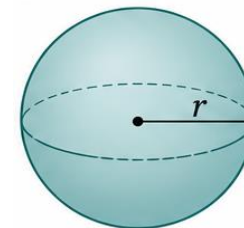
1.



2.



6. SPHERE



$$V = \frac{4}{3} \pi r^3$$

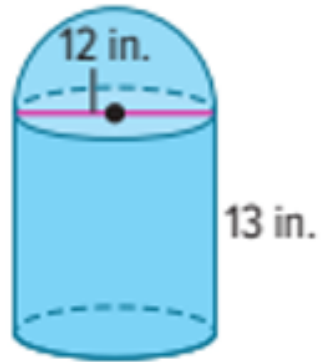
 $r = \text{radius}$

3. A necklace has a single spherical pearl with a radius of 2.1 millimeters. What is the volume of the pearl? Round to the nearest tenth. (Example 2)

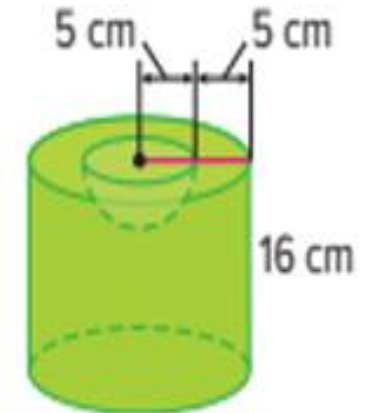
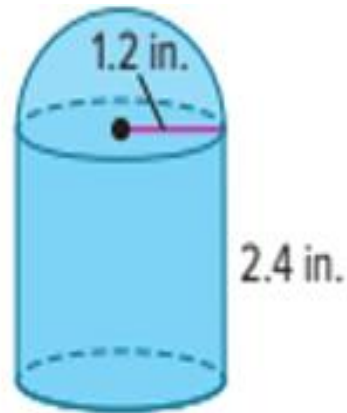
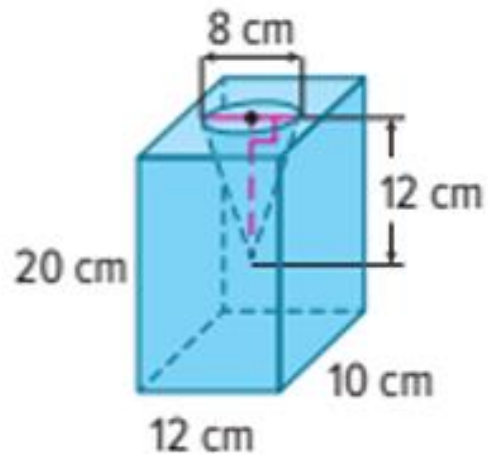
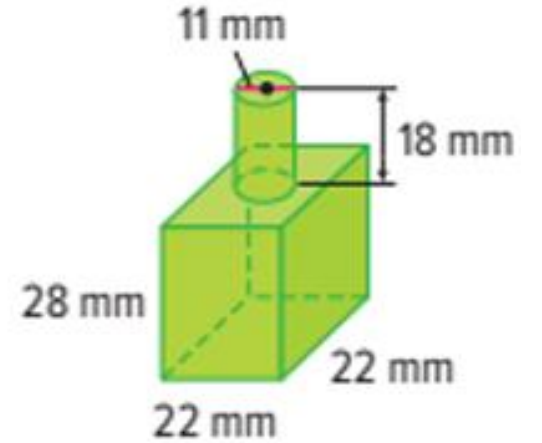
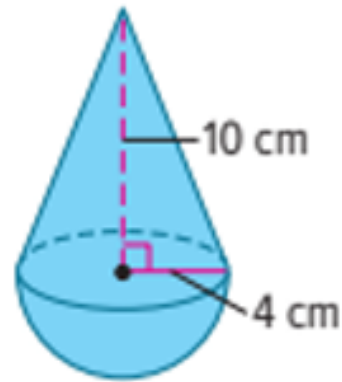
4. The radius of a mini-basketball is 4 inches. A pump can inflate the ball at a rate of 6 cubic inches per second. How long will it take to inflate the ball? Round to the nearest tenth. (Example 3)

Find the volume of each solid. Round to the nearest tenth.

1.

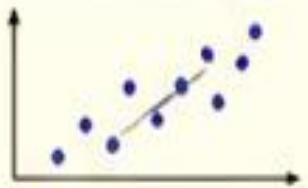
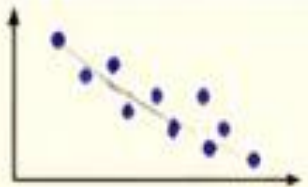
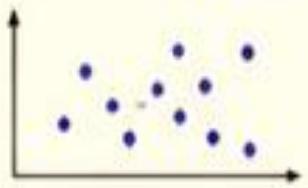


2.



Learn Interpret Scatter Plots**INTERPRETING SCATTER PLOTS**

Look at the overall pattern of the points.

**Positive association**As x increases, y tends to increase.**Negative association**As x increases, y tends to decrease.**No association**

No clear pattern or trend.

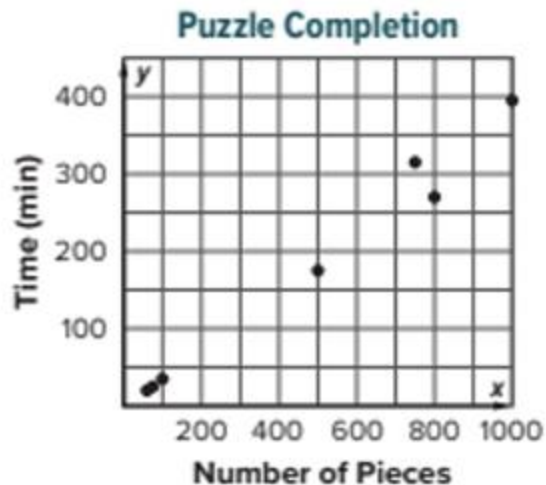
**Nonlinear association**

The relationship is in a curve.

1. The table shows the average points scored per game by an NBA player in the first ten seasons of his career. Construct a scatter plot of the data. (Example 1)

Season	1	2	3	4	5
Average Points Per Game	28.2	22.7	37.1	35.0	32.5
Season	6	7	8	9	10
Average Points Per Game	33.6	31.5	30.1	32.6	26.9

2. The scatter plot shows the relationship between the number of pieces in a jigsaw puzzle and the number of minutes that are recommended to complete the puzzle. Interpret the scatter plot. (Example 2)



1. The table shows the average combined miles per gallon (MPG) and greenhouse gas (GHG) rating for certain mid-size cars. Construct a scatter plot. Then draw and assess a line that seems to represent the data. (Example 1)

Average MPG	22	25	31	28	16	26
GHG Rating	5	6	7	7	3	6
Average MPG	35	41	24	32	30	23
GHG Rating	8	9	5	8	7	5

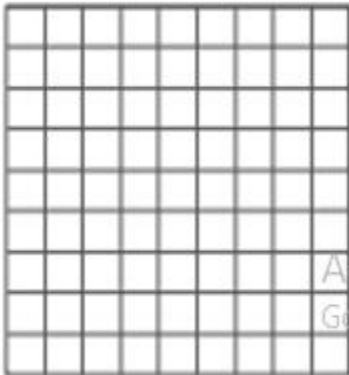
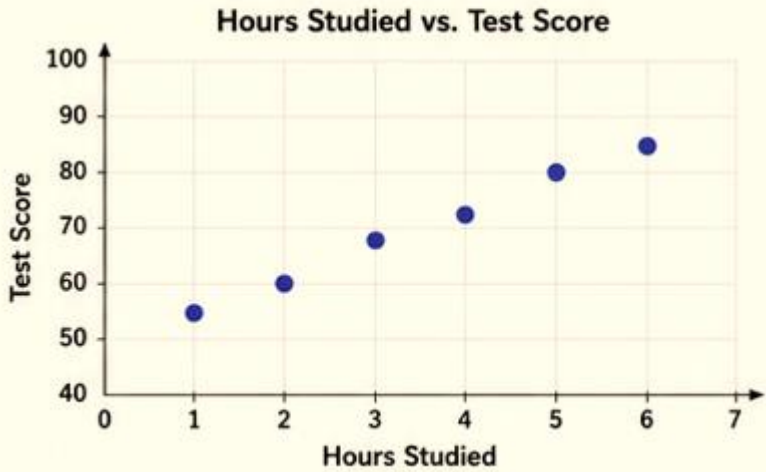
2. The table shows the fat and Calorie content for several snack foods. Construct a scatter plot. Then draw and assess a line that seems to represent the data. (Example 1)

Fat (g)	1	6	7	8	12	18	20
Calories	200	222	239	274	338	339	385

EXAMPLE

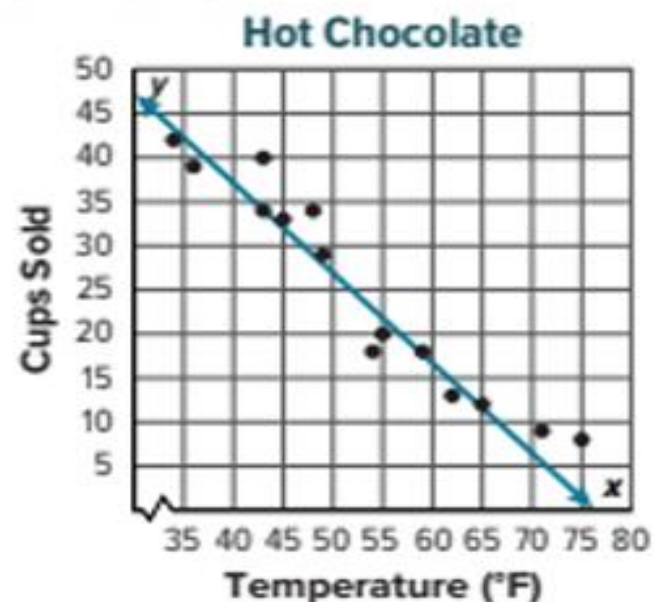
The table shows the number of hours studied and the test score.

Hours Studied (x)	1	2	3	4	5	6
Test Score (y)	55	60	68	72	80	85

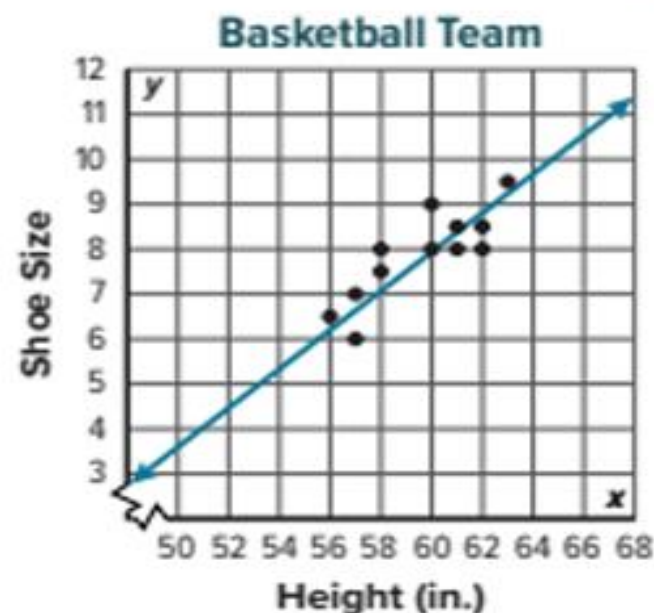


3. The scatter plot shows the number of cups of hot chocolate sold at a football game and the average temperature during the game. Use the line of fit to make a conjecture about the number of cups of hot chocolate sold if the average temperature is 50°F .

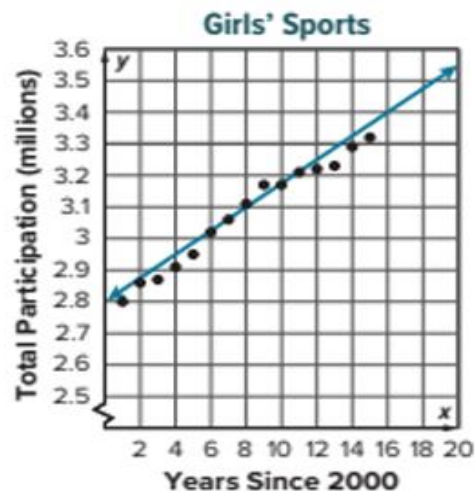
(Example 2)



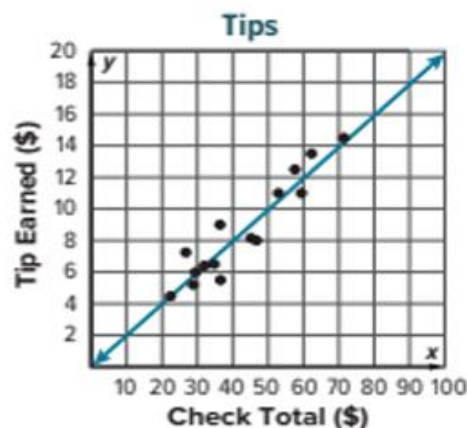
4. The scatter plot shows the height and shoe size of the players on the boys' basketball team. Use the line of fit to make a conjecture about the shoe size of a boy on the team that is 59 inches tall. (Example 2)



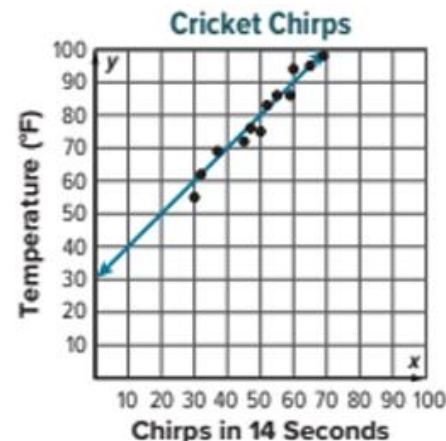
1. The scatter plot shows the number of girls that participated in high school sports. Write an equation in slope-intercept form for the line of fit that is drawn. Then interpret the slope and y-intercept. (Example 1)



2. The scatter plot shows the tips different restaurant servers earned one night. Write an equation in slope-intercept form for the line of fit that is drawn. Then interpret the slope and y-intercept. (Example 1)



3. The scatter plot shows the relationship between the number of times a cricket chirps and the current temperature. Write an equation for the line of fit. Then use it to make a conjecture about the temperature when there are 40 cricket chirps. (Example 2)



Test Practice

4. **Multiple Choice** The scatter plot shows the results of a survey about age and daily time spent playing video games. Which equation best represents the line of fit?



- (A) $y = 0.8x + 90$ (C) $y = 1.25x + 90$
 (B) $y = -0.8x + 90$ (D) $y = -1.25x + 90$

Learn Construct Two-Way Tables

The animation shows the following two-way table containing the results of a survey about drama and art participation. One hundred forty-six students were surveyed.

	Art	No Art	Total
Drama	26	38	64
No Drama	68	14	82
Total	94	52	146

How many students participate in drama, but not art? _____

How many students participate in art, but not drama? _____

The last number in each row is the sum or total of the frequencies in that row. A total of 64 students participate in drama, while a total of 82 students do not participate in drama.

The last number in each column is the sum or total of the frequencies in that column. A total of 94 students participate in art, while a total of 52 students do not participate in art.

EXAMPLE

A survey asked students about their gender and favorite sport.

		Favorite Sport			
Gender		Soccer	Basketball	Baseball	Row Total
	Female	12	8	5	25
	Male	18	14	8	40
	Column Total	30	22	13	65

- 12 female students like soccer.
- 14 male students like basketball.
- 25 students in total are female.
- 30 students in total like soccer.
- 65 students were surveyed.

1. Omar surveyed students at his school. He found that 23 students are in the Chess Club, and 8 of those students are in the Math Club. There are 19 students that are in the Math Club. Ten students are in neither club. Construct a two-way table summarizing the data. (Example 1)

	Math Club	No Math Club	Total
Chess Club			
No Chess Club			
Total			

2. The table shows the results of a survey that asked seventh and eighth grade students whether they buy or pack their lunch. Find the relative frequencies. Round to the nearest hundredth. Are seventh graders or eighth graders more likely to buy their lunch? Explain. ([Example 2](#))

	Buy Lunch	Pack a Lunch	Total
7th Graders	30	45	75
8th Graders	51	25	76
Total	81	70	151

3. The table shows the results of a survey about the number of bus riders at McGuffey Junior High. Find the relative frequencies. Round to the nearest hundredth. Are male students or female students more likely to not ride the bus? Explain. ([Example 3](#))

	Male	Female	Total
Bus	110	84	194
No Bus	85	42	127
Total	195	126	321